The View of Educational Institutions Managers on SIIIR

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Abstract

The contemporary pre-university education, especially in Romania, is characterized by rapid and profound changes that require continuous improvement of management and educational performance in pre-university educational institutions. Educational institutions are forced to adapt and acquire appropriate to meet these challenges. In this context choosing and implementing solutions that provide access to better services, aligning technology resources with institutional missions and increasing the value of institutional data is imperative.

SIIIR = Integrated Information System for Education in Romania

This system aims to provide full management services activities undergraduate educational system in terms of operational, technical, administrative and strategic. It addresses both the needs of users at central level and locally identified needs (the school level).

SIIIR implementation is part of a project entitled "Integrated Information System Education in Romania", financed from the European Social Fund Operational Program Administrative Capacity Development 2007-2013. This project beneficiary is the Ministry of National Education - Projects Management Unit ExternalFinancing.

Project context (as specified in course support appeared in May 2014) is as follows: "The Ministry of National Education, the central authority that coordinates national education system, has a set of information, databases and primary tools for analysis and control unintegrated . SIIIR is offering MEN support to increase capacity planning and monitoring the Romanian educational system, which will ensure increased capacity of Romania to compete long-term global market of goods and services."

Introduction

The use of the new communication and information technologies imposes a completely different way of relating to education in this new digital era. The Romanian education system, trying to fall into line with the European Union standards and to meet the demands of the present-day society, analysed in a variety of scientific studies, has shown a key idea: to simply endow schools with computers and software is just not enough (Köylüoğlu, 2015).

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The radical change of the whole education system in Romania is imposed by a number of factors such as: globalisation, technological evolution and dynamics of the labour market and a growing need of ITC skills in the majority of activity fields.

School management has a more and more important mission in today's society, as information is universally available through modern communication and information systems (Primorac, 2009). Thus, we thought necessary a revision of the idea of general management and that of education management (with reference to education management and school management in pre-university education), including the functions of the education management (Abdikadir, 2013). The education system has a specific information system that needs a clarification of the informational flux. A successful management needs a very clear definition of the information system's raison d'être. Thus, step by step the necessity of using a computer based information system becomes obvious. This system is made up of four sub-systems: the decisional support sub-system, the transaction processing sub-system, the information management sub-system and the executive sub-system. Thus, The Education Information System in Romania (E.I.S) is being used on three levels: the specific field ministry (central, with a regulating role), County School Inspectorates (intermediary) and schools (the base level, the one that performs the actual educational activity. From the point of view of the fields that concern EIS we can name the education field, the legislative field, the administration field, the financial accounting field and the European integration field. EIS aggregates at the central level (the respective field ministry) the data from the county levels concerning the education field (pupil numbers, the content of the learning process, the human resources necessary, the sustained training of staff and the evaluation or certification, respectively), the financial accounting field (the annual balance sheet, the budgetary execution and other statistical factors), the administrative field (material resources – buildings, halls, etc.), the legislative field (containing numerous revisions of Romanian legislation in view of falling in line with the European provisions) (Bădiță, Iosifescu, 2015).

The Ministry of National Education and of Scientific Research, as a central authority that coordinates the educational system in our country (integrally), had as a starting point a stringent necessity, namely, to integrate all the information, the database and the analysis and control tools existent, in a single information system that aims at providing the best efficiency within all the activities performed in the pre-university system. In this direction, there is a continuous evolution concerning the applications used in education management (Bennane, 2013).

Subsequently, in view of increasing performance in education, the Education Ministry has started the implementation of the Integrated Information System of Romanian Education, abbreviated SIIIR, since 2014 (Shah, 2014). SIIIR is meant to become a strategic instrument that facilitates the preparation of public policies, a better communication with the stakeholders and the elaboration of a new strategy in the educational system. Also, the fore mentioned system transfers into practice certain mechanisms aiming at developing and managing information and work flux

concerning the entire activity of the pre-university educational system in Romania on all three levels: central, regional and also for every school (Rus, 2011).

The main objective of this doctoral research is to identify best practices as well as dysfunctions in this new system that acts as a supporting tool of the managers in the educational pre-university system, to analyse the way in which it meets the needs in the educational sphere (Samuelsson, Lindblad, 2015). The thesis analyses to what extent the use of an integrated information system like SIIIR in the managerial activity in pre-university education system concurs to the good functioning of schools as institutions and, more so, to obtaining the sought after performance, from the efficacy point of view, as well as for the effectiveness of the school unit for the main stakeholders (pupils, parents, teachers, school managers, school inspectorates, the Ministry of Education).

The present thesis' starting point is the fundamental assumption according to which the management practiced by the head of an organisation (including the state educational sector), determines the performance of the concerned organisation (Rayle, 2011). During this process, the use by the managers of schools in the pre-university education system of an integrated information system to facilitate and fundament decision making, contributes to the efficiency of the fundamental activity of schools, to educate pupils quantitatively as well as qualitatively and according to the objectives set for this purpose (AlShammari, 2010). For this study, the working instrument chosen is a questionnaire that looks into some aspects of integrated information systems in the management of pre-university school units.

Research results and analyses

The study addresses exclusively the managers of pre-university school units and the staff members who use SIIIR in schools (Kessler, 2010). Thus, the research was conducted on a sample of 152 people from pre-university education, who work in 84 school units.

After data processing, the following results were obtained:
1. The responders' perception on the school's **technological endowment level** has been represented in the questionnaire by question number 2 and it has been measured on a Likert scale with values from 1 to 5. The afferent score of this variable is represented by the average answers to the secondary questions of item 2. The internal consistency index α Cronbach = 0,88. This shows that the 6 secondary questions refer to the same aspect and that we can calculate a score. The condition for α Cronbach to be satisfactory is that it has a value higher than 0,70. The responders' perception on the **efficiency/usefulness of SIIIR** can be found in the questionnaire, in questions 16, 21 and 23 and has been measured on a Likert scale with values from 1 to 5. Following the procedure described above, the score for this variable represents the average of the answers to these 3 questions. In the case of this variable,

α Cronbach = 0,87. The diagram below shows the correlation between the two variables using dot cloud technique.
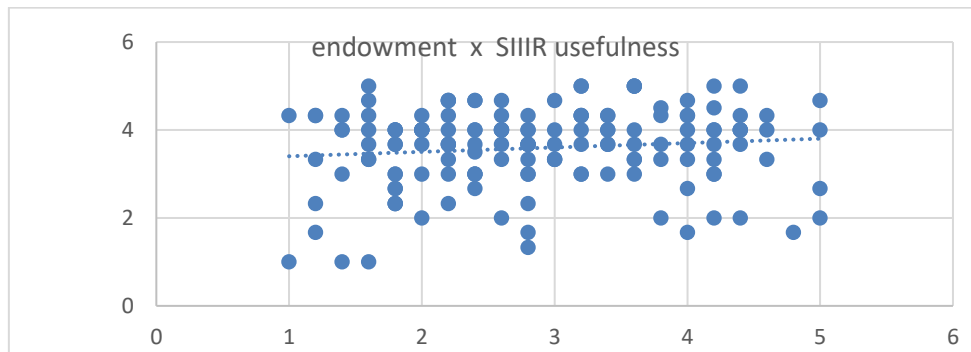
Figure 1. Association between endowments and usefulness

The value of the correlation index is $r_{(149)} = 0,11$; $p = 0,08$; $p > 0,05$, which indicates that there isn't a significant association between the two variables, aspect that can also be noticed by analysing the dot cloud in Diagram 84. Under these circumstances, the first hypothesis is disproved (figure 1).

2. The perceived level of incitement towards further training for SIIIR use is found in the questionnaire in question number 20 and has also been measured on a Likert scale with values from 1 to 5. The score for this variable was obtained by calculating the average of the 4 secondary questions of item number 20. The second variable of this hypothesis is the same as the second variable of the previous hypothesis, the details about it are the same ones presented above. As in the case of the previous hypothesis, we will present the diagram of the correlation between the two variables.
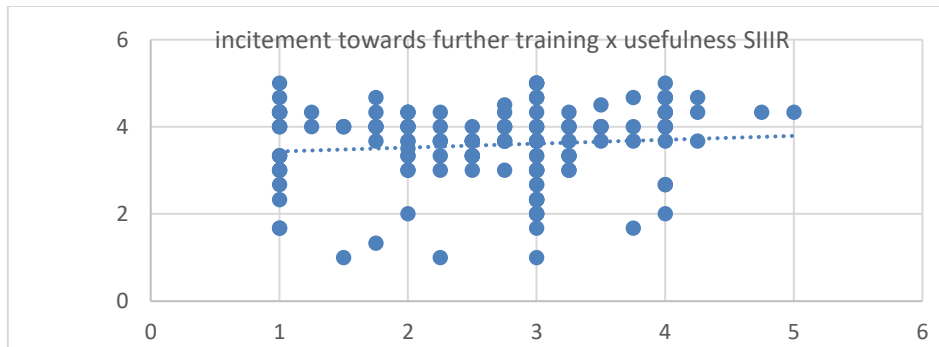

Figure 2. The association between incitement towards further training and usefulness

The value of the correlation index $r_{(149)} = 0.09$; $p = 0.13$; $p > 0.05$ which shows that as in the previous hypothesis, there is no significant association between the two variables, as can be seen by analysing the dot cloud in Diagram 85. As a consequence, the second hypothesis is also disproved (figure 2).

3. For this question we represented the 5 managerial functions (planning, organising, motivating, control and decision making), each of them having 3 or 4 secondary multiple choice questions on a Likert scale with values between 1 and 5. Further on, we will present the internal consistency indexes (α Cronbach) with the questions for each managerial function. For function (1) planning: α Cronbach = = 0,92; (2) organising: α Cronbach = 0,96; (3) motivating: α Cronbach = 0,94; (4) control: α Cronbach = 0,87; și (5) decision making: α Cronbach = 0,95.

We ponder the perceived level as high when the average score of the responders is higher than 4. We have chosen this starting point because the values 4 and 5 of the scale show that the usefulness of the SIIIR application is perceived as high and very high (Treeratanaporn, 2014).

Below, we represented the diagram with the average scores for each managerial function. This question was only answered by school principals and deputy principals.
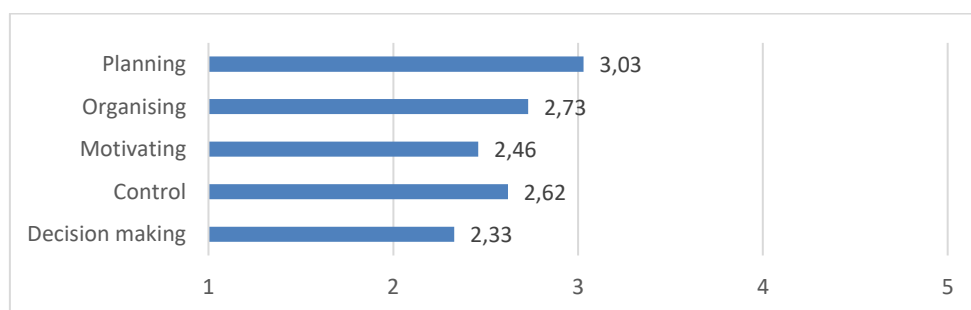
Figure 3. The extent to which SIIIR is perceived as useful to managerial functions

As can be noticed in Figure 5, school principals and deputy principals do not think, on average, that SIIIR is helpful to a great extent in fulfilling their managerial functions. All 5 average scores for the 5 managerial functions are below 4 points; the highest being the score for planning 3,03. As such, we can say that the usefulness level of the application for fulfilling the managerial functions is at most a middle one, as perceived by the school managers. According to these findings, we can affirm that hypothesis number 3 is disproved (figure 3).

4. Taking into account that the efficiency/usefulness SIIIR variable has been detailed above and that the other variables are self understood, in this section we will present only the diagram and the table, then we will note down the results explicitly (Figure 4).

Age
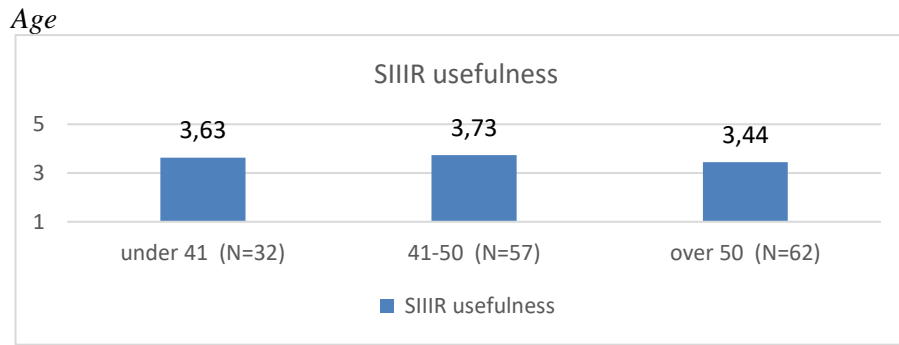
Figure 4. SIIIR usefulness according to age categories

Presentation of ANOVA results

Category	N	m	AS	F	df	p
Under 41	32	3,63	0,84			
41-50	57	3,73	0,80	1,51	150	0,22
Over 50	62	3,44	1			

To find out if there are any differences regarding the perceived level of utility of SIIR among the interviewees belonging to the various categories of age, we have conducted a variant analysis (ANOVA regular). Table 1 show, there is a slight difference among the 3 groups, the group of age of 41 to 50 having the highest score, whereas the group over 50 – the lowest. Nevertheless, the difference among the groups is not significant from a statistical point of view, $F(2, 148) = 1,51$; $p = 0,22$; $p > 0,05$.
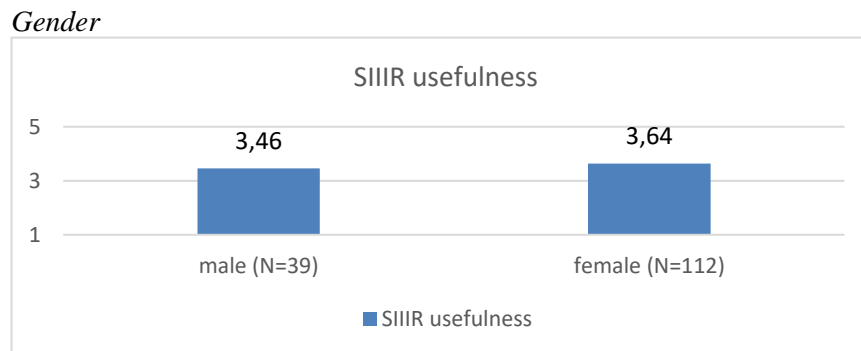
Gender

**Figure 5. SIIIR utility according to gender**

Presentation of the independent test

Table 2

Gender	N	m	AS	t	df	p
Male	39	3,46	0,95	-1,11	150	0,27
Female	112	3,64	0,88			

In order to verify whether there is a difference of perception regarding the SIIIR utility between men and women, we have conducted t tests on independent groups. As shown in Figure 5 and Table 2, women, compared to men, perceive the SIIIR application as slightly more useful. Nevertheless, there is no significant difference between the two groups, from a statistical point of view, $t(150) = -1,11$; $p = 0,27$; $p > 0,5$.

The two groups of responders compared, are made up of school principals and deputy principals on the one hand and school secretaries, IT staff, administrators and accountants on the other hand (Bibu, 2006). We have chosen this classification because we want to find the differences in perception between the managerial level and the other positions in schools
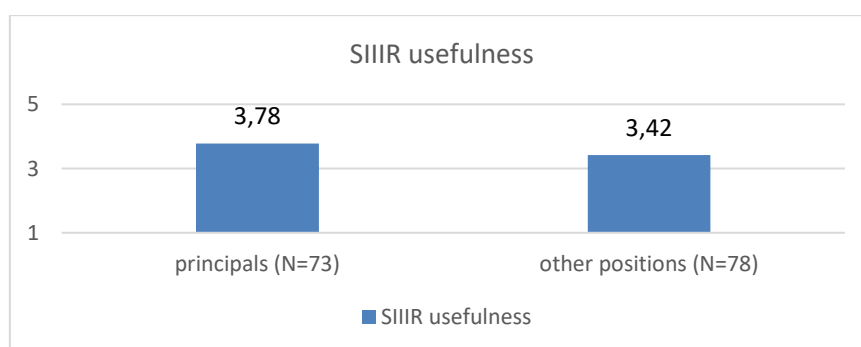
Figure 6. SIIIR usefulness according to the position in the school

Result presentation t independent test

Table 3

Group	N	m	AS	t	df	p	d
Principals	73	3,78	0,72	2,50	150	0,01*	0,41
Other positions	78	3,42	1				

Note: * significant if $p < .05$;

In order to verify if there is a difference in perception on SIIIR usefulness between the two groups, we have conducted the t test again, for independent groups. As can be seen in Figure 6 and Table 3, the participants of the first group perceive the usefulness of SIIIR as higher than the responders in the second group. In this case there is a significant difference from a statistic point of view as well, t(150) = 2,5; p < 0,05; and an average effect size, d = 0,41. This data support the fact that, in general, principals and/or deputy principals perceive the SIIIR application as useful to a greater extent than the other categories of staff. For these differences we can observe an average effect size (d = 0,41).

Rural – urban
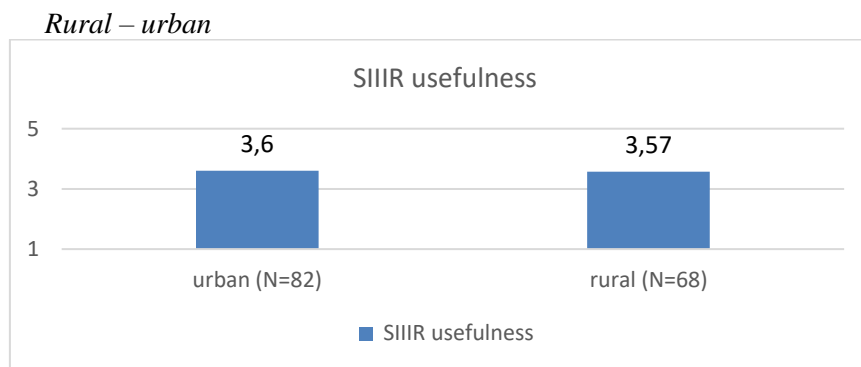
Figure 7. SIIIR usefulness according to school location

Presentation of independent t test results

Table 4

Location	N	m	AS	t	df	p
Urban	82	3,60	0,86	0,18	150	0,86
Rural	78	3,57	0,95			

In order to verify if there is a difference of perception on SIIIR usefulness based the school's rural or urban location, we used the t testing technique for independent groups. As can be seen in Figure 7 and Table 4, there is a very low difference in favour of schools with urban location. In conclusion, there is no significant difference from a statistic point of view between the two groups, t(149) = 0,18; p = 0,86; p > 0,5.

Conclusions

Following the analysis of the scientific research conducted for this thesis, analysis that was also correlated with other dysfunctions I noticed throughout my professional experience a whole series of recommendations comes into prominence (Fetschenko, 2015). As a first recommendation, I consider necessary that managers of school units, together with decision makers from School Inspectorates and Education Ministry should frame action plans for medium and long term towards **school endowment**, using available funds but also to fundraise. It is absolutely necessary that this be a joint effort of all decision makers in education, regardless their level: national, regional, local or within a school unit.

Another aspect that needs special attention is teacher training (allotting the necessary funds to the institution's budget), and also auxiliary staff training in view of IT equipment using (El Kadiri, 2016). Adding to this aspect, it is of an extreme importance that new ways are found, to stimulate both morally and materially the teachers who use the technical endowment of the schools as well as didactic software to support their teaching, and to also stimulate the auxiliary staff (secretaries, accountants, computer scientists, administrators) who use job specific software.

I have formulated six recommendations addressed to the authorities from the national level, as follows: a) the introduction of national, unitary norm concerning the endowment with computers, office equipment and educational software of each school on a European level, according to each cycle of study; b) conceiving of a national certification system for teachers concerning the ability to use educational software corresponding to each cycle of education (primary school, gymnasium, high school); c)setting clear, precise demands concerning the minimal level of competence in using educational software for professional promotion for distinctions, of teachers; d) introducing performance indexes for school managers/principals, concerning the use of the technical endowment and educational software in the school they run; e) the requisition of ECDL type certification as a hiring/promoting condition for the entire personnel in Romanian schools; f) organising a national competition that awards highly performing schools using judging criteria that include the use of technical endowment and educational software.

I also recommend the following measures to be taken in schools: a) training courses, at the schools' expense, for the whole personnel for ICT skills (like The European Computer Driving Licence IDCL), and also for skills for specific software for each activity field.; b)training courses for all the pupils for ICT skills (like ECDL), for using social media for

As for the usefulness of SIIIR in pre-university education school units and in County School Inspectorates, a much more intense approach concerning professional training of the personnel who use it (including managers) is absolutely necessary. This training will lead to an in-depth knowledge of the facilities this program offers and, implicitly, to using it to a greater extent, which will streamline both the managers' work and the activity of the other compartments in the school units. This way, we think that the integrated information system SIIIR can become an extremely useful tool, a unitary flexible exhaustive management system of the

activities within a school and even a strategic instrument that could contribute greatly to the elaboration of public policies and of strategies in the national education system and, not lastly, a tool that helps raising efficiency in communication with the other institutions.

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